CHAPTER 4

GOALS AND SERVICE STANDARDS

Goals were developed in an iterative process that began with identification of needs at the first Technical Assistance Committee (TAC) meeting. Once basic needs were identified, goal statements were crafted in response, and objectives identified. These were refined over the course of the study, and service standards were added to reflect a focus on productive services. At ensuing TAC meetings, the TAC reviewed first the goal statements, then the objectives and strategies, and finally the standards, with the opportunity to discuss and comment upon them.

The attached set of goals reflects the four basic areas of concern:

- Provide for a network of services meeting multiple trip purposes
- Develop infrastructure to support intercity and regional bus services
- Provide for good quality services
- Provide for stable funding

Each goal includes the need statements to which it is responding and is followed by a series of objectives, strategies, and suggested standards for measuring progress.

The goals reflect the long-range orientation of this *Network Plan* while the objectives and strategies have more of a near-term focus. Several objectives are listed for each goal, reflecting the range of activities that are covered under the goal. For Goal A, the first objective references the network map adopted through this planning process. The network map is located in Chapter 7, **as Figure 7.4**.

As this plan is updated regularly, the objectives and strategies can be readily updated to reflect current conditions. This is the first plan with an emphasis on evaluating the performance of services based on standards. As these standards are put into place some fine-tuning may be appropriate. Those strategies and standards in regular black typeface are recommended for immediate implementation. Additional strategies and standards that may be considered in the future are also included in grey italic typeface.

Table 4.1: Goals, Objectives, Strategies, Performance Measures, and Standards

GOAL A: Provide for a network of reliable regional and intercity transit services that serve multiple travel needs and markets. *There is a need to improve transit access to key economic generators to support a healthy economy and provide access to jobs. There is a need to provide regional commuter bus in locations where there is a strong regional demand that can be captured by transit, to provide access to regional medical centers or other services; and to provide service to regional travel hubs for personal travel to increase residents' mobility.*		
Objective	**Strategies**	**Performance Measures**
Objective A.1: Develop and maintain services in each of the corridors illustrated in the CO Regional and ICB Network Map (Figure 7.4)	• Develop corridor plans as appropriate • Work in partnership with public and private transportation providers to develop and maintain regional, inter-regional, and ICB services • Develop a plan and pilot for developing coordinated human service transportation services that cross regional boundaries • Monitor the role of the private sector in operation of regional and ICB services • Work to build transit operators in regions that do not have existing programs but which have significant transit needs • Provide for demand response services at the destination end of regional and essential services to enable people to access multiple destinations	• Portion of population within 25 miles of ICB bus stops. • Percent of corridors within 200 miles of major service areas with same-day round-trip service available. *Others to consider:* • *Portion of commuters in rural counties with access to regional transit services who utilize the transit mode to access work.* • *Percentage of total miles of intercity bus service operated without public subsidy for operations.*

Objective A.2: Support services that meet appropriate level of service at acceptable cost for each service type.	• Monitor subsidized intercity and inter-regional services against service standards for each type of service. Collect data on revenue, operating cost, boardings, total trips, missed and late trips, accidents and incidents, and miles operated. Measure, at a minimum:
	  ○ Farebox recovery ratio
	  ○ Boardings per trip
	  ○ Operating cost per mile
	  ○ Subsidy per passenger
	  ○ Missed and late trips as percent of total trips (non-weather related)
	• Evaluate and make adjustments, balancing standards performance and demand
	• Evaluate policy issues around directing financial resources towards provision of regional, inter-regional, and intercity services that balance productivity and coverage
		• Relative performance on each service standard (farebox recovery ratio, boardings per trip, subsidy per passenger, quality of service measures, etc.)

Objective A.3: Maintain a CO ICB and Regional Transit Network Service and Facilities Plan that is responsive to changing conditions.	• Evaluate network and facilities plan and set priorities for improvements every five years as part of the update to the State Transit Plan, ICB and Regional Bus Plan, and Regional Coordinated Transit plans	
GOAL B: Develop infrastructure that supports and enhances transit efficiency. *There is a need to improve travel time and reliability of transit services operating in congested corridors. There is a need to provide intermodal facilities at locations across the State. There is a need to accommodate on-street intercity bus and regional commuter bus activity.*		
Objective	**Strategies**	**Performance Measures**
Objective B.1: Implement strategies to decrease transit travel time and improve reliability.	• Identify congested areas in high capacity corridors where travel time improvements would improve operating efficiencies and attractiveness of the transit mode • Coordinate with roadway improvement projects to ensure transit infrastructure is incorporated • Consider a range of improvements needed to improve transit travel times, including transit signal priority, new HOV/bus lanes, and other transit options	• Transit on-time performance • Transit mode share in corridor *Others to consider:* • *Bus travel times in key segments or at key intersections.* • *Ratio of average transit travel time to auto travel time in key (congested) segments*
Objective B.2: Provide for safe, clean, accessible, and visible transit facilities serving the regional and intercity bus network.	• Establish passenger transfer locations in cooperation with public and private landowners including safe on-street stops and access to off-street facilities • Assure there is a responsible party for safety, maintenance, posted customer information, and passenger amenities at passenger facilities • Improve the stability, safety, and visibility of stops for existing ICB and regional services. This strategy may include uniform signage for public and private providers	• Percent of stops with uniform signage identifying them as ICB or regional stops.
Objective B.3: Develop new or improved Park-and-Ride lots along ICB or regional bus corridors to accommodate demand.	• Monitor capacity and use of existing Park-and-Rides in regional corridors. • Develop improvement plans in corridor planning.	• Available capacity at P-N-R facilities
GOAL C: Provide for good quality regional and intercity transit services across Colorado with connections to local transit systems and other transportation modes. *There is a need to provide transit information on all available services easy to find and use locations.*		
Objective	**Strategies**	• **Performance Measures**
Objective C.1: Create better connectivity and travel choices for customers using multiple transportation systems or modes of travel.	• Support schedules that allow for connections between transit systems and other modes of travel, including air and rail travel. • *Increase the number of regional services that are interlined with intercity services, as appropriate to strengthen travel options*	• *Percent of regional routes that are interlined, as appropriate.*
Objective C.2: Increase public awareness	• Assess marketing and customer information needs for services	• Presence of coordinated marketing

of transit services available in Colorado	that cross regional boundaries • Provide for statewide transit traveler information. • Market the statewide resource to obtain information on all transit services provided within the state. • Identify strategies for coordinating marketing efforts between local and statewide services and public and private sectors. • Consider: Develop ongoing outreach programs to assess experience of commuter and regional bus passengers	plan. • Presence of coordinated information materials. • Presence of single comprehensive site for information on all transit services and percent of transit systems participating.
Goal D: Provide for stable funding for intercity and regional services. *There is a need to identify funding that aligns well with current operating and capital needs.*		
Objective	**Strategies**	**Performance Measures**
Objective D.1: Leverage investments in transit services made by public agencies (local, state, and federal sources) and the private sector in developing statewide transit connections.	• Work with local partners to identify opportunities for increasing transit resources • Strengthen the use of State funds to leverage Federal resources. • Make maximum use of private sector investment to leverage State and Federal resources.	*Consider:* • *Increase in passenger miles traveled (for urban area allocations of Federal 5307 funds)* • *Increase in rural ridership (for rural area allocations of Federal funds)* • *Percent of ICB miles operated that are matched by private sources.*
Objective D.2: Align CDOT managed funding (*FASTER*, FTA funds) to support balanced local, regional and intercity transit goals.	• Review criteria for awarding funding and strengthen degree to which they align with state transit goals and needs for operational and capital funding	
Objective D.3: Support the provision of regional and intercity bus services by the private sector.	• Identify needs and constraints of private sector partners • Utilize available Federal and State funds to provide private sector ICB infrastructure, including buses, multi-modal facilities, and park-and-ride lots • Provide private sector operators with access to and use of infrastructure that is equivalent to public sector providers	• Number of multimodal facilities used by private sector services *Also consider:* • *Number of ICB vehicles purchased with Federal or State funds.*
Objective D.4: Develop partnerships with other state agencies to jointly fund regional human service transportation services.	• Work with CO Department of Health Care Policy & Finance to identify how to provide cost-effective non-emergency medical transportation • Work with CO Department of Military Affairs, US Veterans Administration, and volunteer Veteran programs to fund regional services meeting the needs of Veterans	• Number of partnership agreements that are in place in regards to facilities, services, funding, or other items.

Network decisions will always reflect statewide values and reflect a balance of coverage and productivity. Service standards will support informed and transparent decision-making where the trade-offs can be identified. All decisions will be made in the context of available resources. As the financial plan in Chapter 7 shows, there is not at present adequate funding to complete the network plan so making decisions on where to place scarce resources should be consider performance and reflect solid planning with stakeholders.

SERVICE STANDARDS

The development and use of service standards are a key part of this *Network Plan*. This section identifies the anticipated range of performance for existing services, by service type.

As documented in Chapter 2, CDOT has developed a number of intercity bus projects under the Section 5311(f) program, some of which have been in operation for several years, some of which are funded but not yet operational (or with very limited operating data). In addition, as documented in Chapter 3, there are additional potential services to be developed (unmet needs) and possible projects that may arise as a result of the grant solicitation process. Given that there are limited resources, and a concern that the state focus its support on projects that are efficient and effective, there is a need to determine which projects are worth continuing, and which new projects should be funded. For that reason there is a need to establish service standards and policies that can be used to evaluate and guide the intercity bus program as it goes forward.

In addition, with the development of the Interregional Express (IX) bus service, CDOT will be responsible for monitoring the effectiveness of the services it provides under contract. This too calls for service standards to guide decisions on adjustments to the services. This section discusses potential performance measures for both intercity and interregional express services.

POTENTIAL PERFORMANCE MEASURES FOR INTERCITY SERVICES

Typically intercity bus services have been operated by for-profit firms within a general framework that evaluated routes (and particular schedules on routes) and stops based on their contribution of revenue (from fares and package express) as compared to the costs involved in providing the service, all with a goal of overall firm profitability sufficient to attract capital. For that reason, typical for-profit measures included:

- Revenue per mile (as compared to cost per mile)
- Passenger-miles
- Operating ratio (similar to farebox recovery, but with costs as a percentage of revenue rather than revenue as a percentage of costs)
- Average load or load factor (average number of people on the bus)

- Revenue generated at a stop or terminal
- Ridership

Intercity bus carriers generally collect the data required for these measures as part of their normal pattern of business. These measures differ from some of the more normal urban transit measures in that the denominator is revenue miles rather than hours, because overall operating speeds tend to be less variable and costs on intercity services tend to be driven by miles rather than hours. Also, fares are distance-based, so revenue is based on the number of passenger-miles times a fare per mile.

For CDOT's intercity program, which may include carriers with different types of fares (some of which may be distance-based, but others not), the following measures are recommended to allow the state to monitor services and evaluate potential projects:

- Revenue per mile. Total operating revenues divided by revenue miles.
- Cost per mile. Total operating costs divided by revenue miles.
- Farebox recovery (revenue divided by operating costs). This measure combines demand, fare levels, and operating cost impacts in a single figure.
- Boardings per vehicle trip. The number of annual (or quarterly) passenger boardings per vehicle trip can be calculated relatively easily and provides an indicator of the utilization of the capacity being provided. It is a more easily calculated surrogate for average load factor.
- Net deficit per boarding. This measure serves as an upper bound on the amount of state/federal funding being spent per trip on the particular service. It must be considered in light of the typical long-distance nature of an intercity trip, but at the same time services with very high costs per passenger might well be evaluated to see if those trips could be provided in a less costly manner by demand-responsive/limousine services, or whether that amount of resource should be spent on that service rather than being shifted to provide more trips elsewhere.

PERFORMANCE OF EXISTING INTERCITY PROJECTS

As noted above, several of the routes have been in operation for several years, and there is some existing data that can be used in considering where to set service standards for these performance measures. CDOT's bi-annual application requests data on existing services for the previous complete year (FY 2012 in the FY 2014-15 application), estimated current year (FY 2013), and projected grant years for:

- Boardings
- One-way route miles
- Colorado one-way route miles

- Annual days of service
- Annual Colorado round-trip route miles
- Cost data requested for the same periods:
  - Operating cost per mile
  - Capital cost per mile
  - Administrative cost per mile
  - Preventive Maintenance cost per mile
  - Total regular cost per mile
- Annual revenues on full route
- Annual revenues on Colorado portion
- Annual revenues at Non-urbanized Colorado stops

CDOT also requests data with invoices submitted by program grantees showing actual ridership, Colorado revenues, Colorado operating costs, and Colorado segment net deficit, which would allow monitoring as a project is implemented and provide actual (as opposed to projected) performance.

SUGGESTED SERVICE STANDARDS FOR INTERCITY SERVICES

Based on the available data, the following service standards are proposed for intercity projects in Colorado:

- Farebox Recovery:
  - Minimum of 40 percent for services with one end serving Denver
  - Minimum of 20 percent for all other routes
- Boardings per trip:
  - Minimum 10 (annual average) for services with one end serving Denver
  - Minimum 3 (annual average) for all other services
- Net Deficit per Passenger:
  - Maximum of $100 per trip for all services

New projects would be expected to achieve these levels within two years of initiating operation, 50% of the target levels at the end of the first year. Services not meeting these levels at the end of two years would be reviewed to determine if changes in schedule times, frequency, fares or marketing would be likely to improve ridership—if changes are implemented the service would receive another year to determine if the thresholds are being met—at that point services not meeting the thresholds would be discontinued and the funding applied to other projects.

Applications for proposed projects would include estimates of ridership, revenue recovery, and costs such that estimated performance could be evaluated against these standards. Projects whose proposed performance would not achieve these levels would receive funding consideration only after continuation and new projects above these levels have been funded.

POTENTIAL PERFORMANCE MEASURES FOR INTERREGIONAL EXPRESS SERVICES

As CDOT initiates Interregional Express services, using FASTER state funds to support the operation of services, it is appropriate to consider performance measures as one tool in guiding investment decisions. The analysis of existing regional services in Colorado and the analysis of peer states that operate express commuter services provides data to set ranges for proposed performance standards. Additional information on performance measures is included in Appendix B.

Appendix B, Interregional Express Bus Services, describes two types of measures with which CDOT is concerned. One type measures the efficiency and effectiveness of services, similar to those listed for intercity bus services. These may include passengers per mile, boardings per trip, and farebox recovery ratio. They help answer the question, "Are we investing in the right services?" The other type measures if the services are well operated, and include reliability measures (such as on-time performance or miles between breakdowns) and safety measures (miles between accidents).

Data from the peer analysis allows the calculation of cost per mile, passengers per mile, cost per passenger, and farebox recovery ratio. Data collected on regional services for this update to the *Network Plan* allows the calculation of all except the farebox recovery ratio. An estimate of passengers per vehicle trip has also been calculated for Colorado regional services. All data has been accepted as reported, and there are likely some differences in what is included in these numbers among the operators. In spite of this limitation, the data is useful in understanding the range of existing services on various performance measures.

RIDERSHIP: PASSENGERS PER MILE AND PASSENGERS PER TRIP

Interregional express routes are expected to carry passengers on long-distance trips – the average trip distance may be 50 miles per rider. As with intercity bus services, it is therefore recommended that riders per trip be used as a standard rather than passenger boardings per mile.

Passengers per Mile Standard. It is anticipated that the passenger boardings per mile will fall into the lower half of the range, between 0.2 and 0.4 boardings per mile, because passengers will travel an average of about 50-miles per trip. (See **Figure 4.1**)

Passengers per Trip Standard. An average of 11 and 22 passengers per trip are forecast on the interregional express buses in the second year of operation, and between 14 and 30 passengers

per trip in the third year of operation. As this service will only operate in the peak direction, except for one mid-day trip in the I-25 corridor, the passengers per trip will be at the high end of the range. The recommended standard is:

- Boardings per trip:
  - Minimum 10 (annual average) for services with one end serving Denver

Additional trips will be considered when an average of more than 30 riders are traveling on a given route, and there are routinely insufficient seats for all passengers wishing to board. (See **Figure 4.2**)

Figure 4.1: Passengers Per Mile

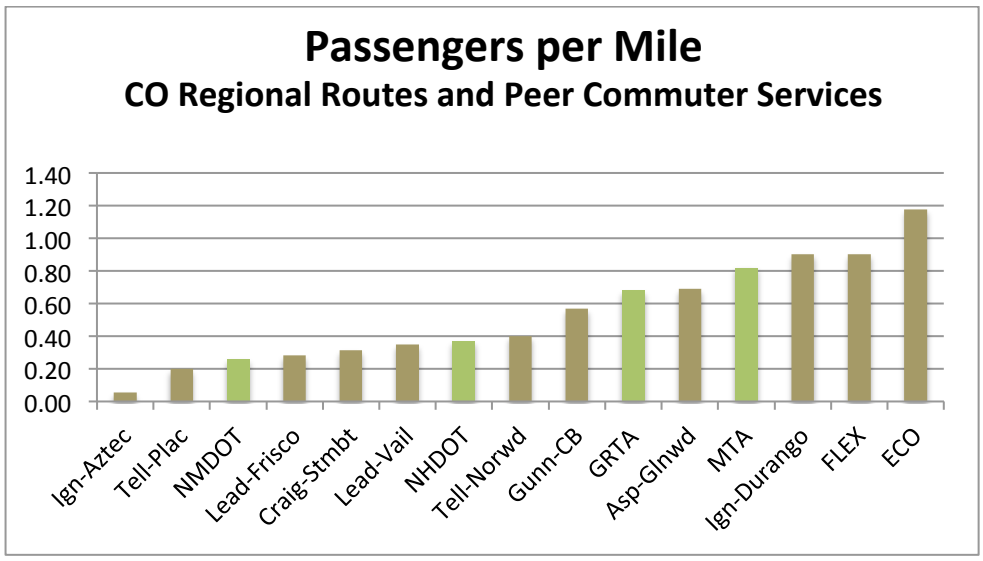
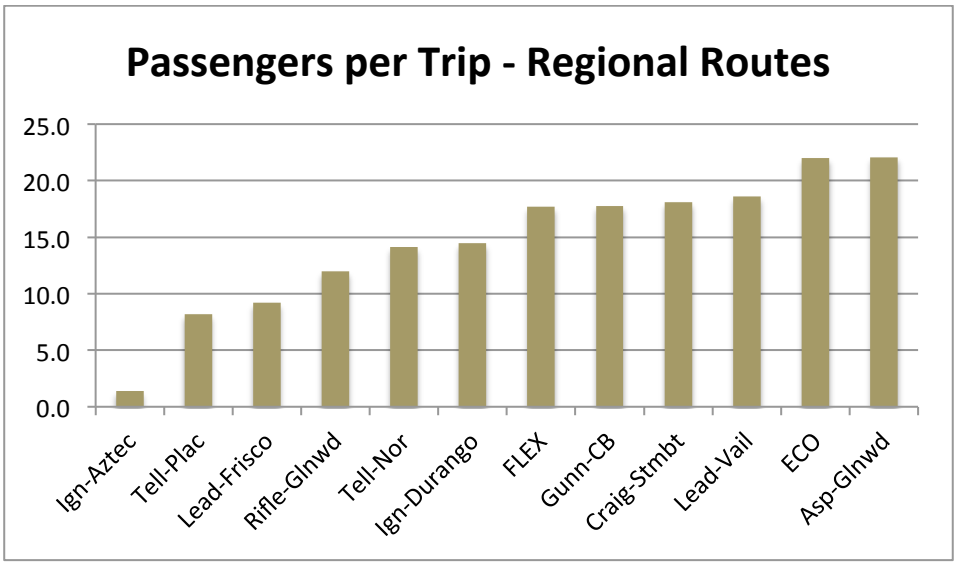


Figure 4.2: Passengers per Trip

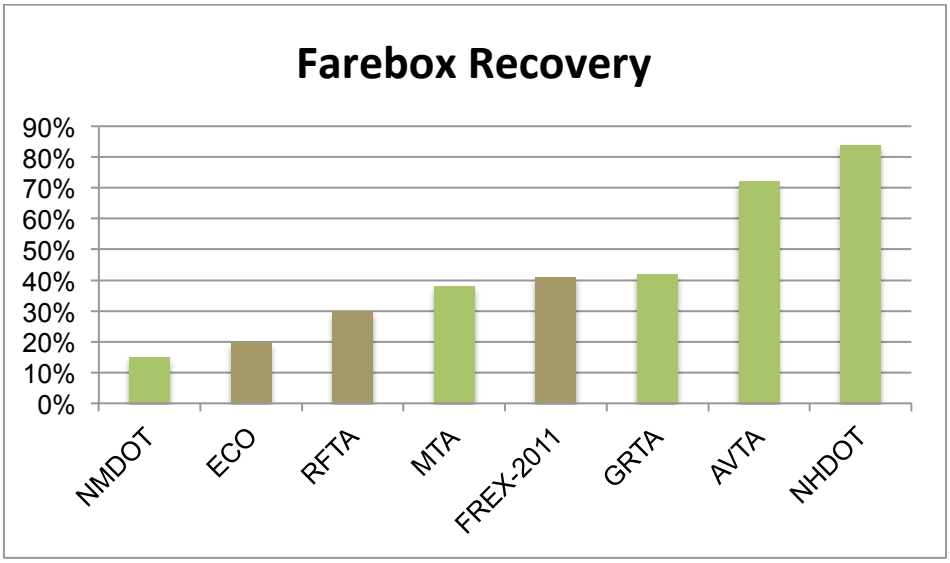


Farebox Recovery Ratio

The Interregional Express services have been designed to provide a sustainable transit alternative in corridors where congestion is a significant issue and where existing transit systems can be linked together. The fare structure ($0.17 per mile for cash fares) considers the cost of driving an automobile balanced with the longer travel times for transit as compared to driving a car. A key objective is to provide the maximum fare revenue, allowing operation of the most services.

The following chart illustrates the farebox recovery of the peer systems, in green (2012 data) along with comparative information for similar services in Colorado, in brown. The FREX data is from 2011, and the ECO and RFTA data is approximate.

Figure 4.3: Farebox Recovery



The farebox recovery ratios reflect both policy decisions and ridership levels. For example, New Mexico DOT places a high value on affordability and so has set the fares at a low level. At the other end of the spectrum, New Hampshire DOT places a high value on sustainability and has both high ridership and cost-efficient operations.

The planned Interregional Express buses will operate in two different environments, with I-25 service focused on peak hour employment travel and I-70 service focused on providing a public transit alternative that connects existing services in the I-70 corridor. It is anticipated that each will have different characteristics, so two farebox recovery standards are proposed:

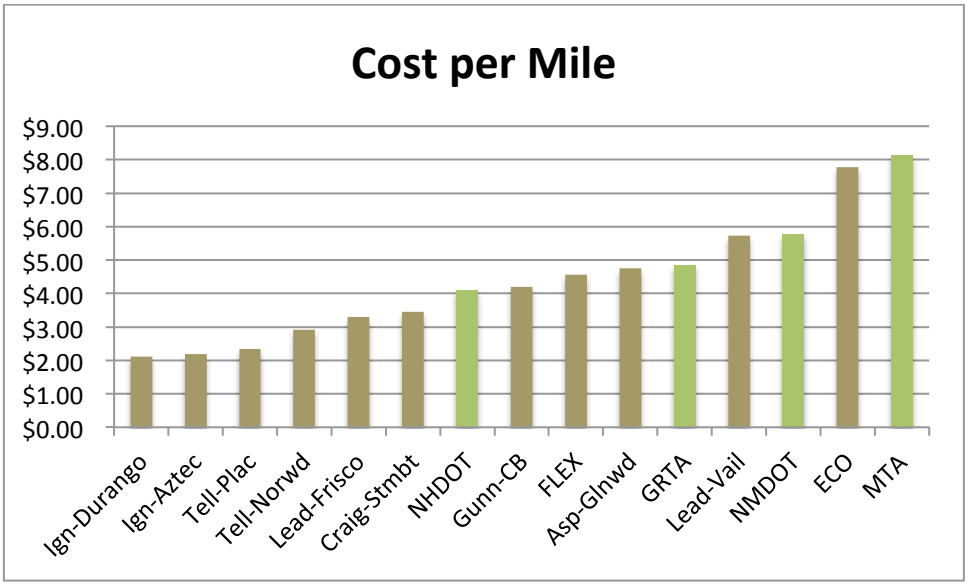
- Farebox Recovery:
  - Minimum of 30 percent for services operating four or more peak hour trips.
  - Minimum of 20 percent for services operating less than four peak hour trips.

Net Deficit per Boarding

The net deficit per passenger boarding is a comprehensive measure that considers the cost per passenger and the fare structure. It is recommended that this standard be set after CDOT has the service in operation. The bid price per mile will be known and there will be some experience with ridership levels. The numbers in this section provide a range of what may be considered acceptable.

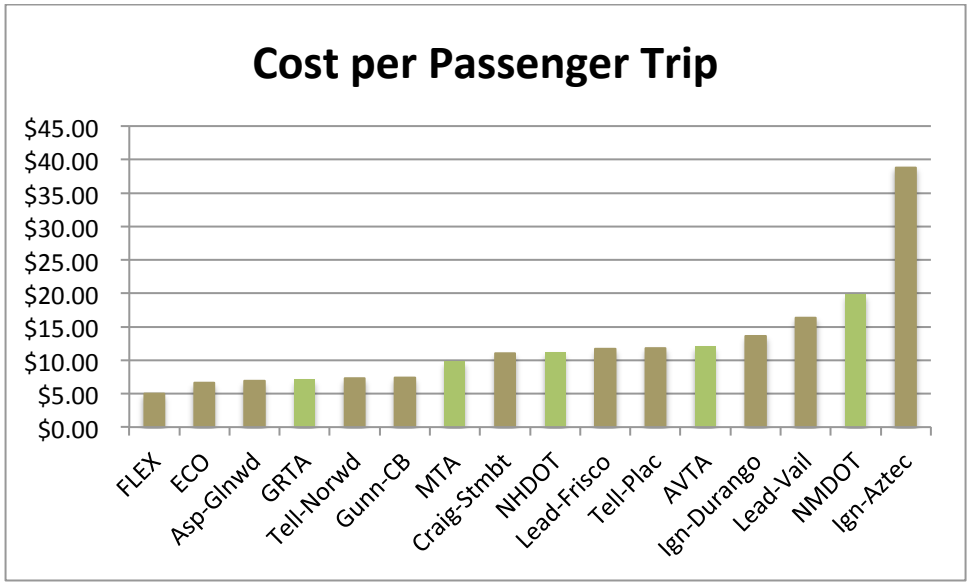
Until the contract is awarded, the cost per mile will not be known. The following chart shows the reported cost per mile for Colorado regional services (brown) and peer commute services (green). The range in cost per mile shown in the chart below reflects the diversity of operating and accounting arrangements. For practical purposes, costs under $3.00 per mile likely do not include all costs associated with the services and those over $6.00 per mile include the cost of vehicles or other items (such as facility costs) that are not comparable to the others.

Figure 4.4: Cost per Mile



Measuring the cost per passenger includes both the operating cost and the level of ridership. The following chart illustrates the reported cost per passenger trip for both Colorado regional routes (brown) and peer commuter services (green) to provide a range of costs. Those systems with the lowest numbers have high ridership and a significant number of riders making short trips. The high cost per rider of the Ignacio-Aztec service reflects the low ridership on this route in 2012. The anticipated range for Interregional Express services is between $10 and $20 per passenger trip on the I-25 corridor. Some experience will be needed to estimate costs on the I-70 corridor as it is not known what travel patterns and trip lengths will emerge.

Figure 4.5: Cost per Passenger Trip



Once service is in operation, the standard for the maximum subsidy per passenger trip can more accurately be identified. From projections, it appears that the subsidy should be less than $20 per passenger trip even if ridership is low and trip distances are long. However, the actual experience of the interregional express bus service and comparable experience of regional services in Colorado will enable CDOT to identify the maximum subsidy that is acceptable.

Table 4.2 summarizes recommended service standards by type of service. The range for each is adjusted to reflect the characteristics of each type of service. Not all service types have measures in each category. Data is available in this study to establish performance measures for employment-based services. To identify similar measures for the long-distance "essential services" that are oriented to travel needs within Colorado (as opposed to connecting to the national intercity network) additional data will need to be collected.

Table 4.2: Service Standards by Type of Service

	ICB	IXB	Regional
Farebox Recovery	40% minimum for Routes with one end in Denver 20% minimum for all other routes	30% minimum for routes with 4 or more peak trips 20% minimum for routes with less than 4 peak trips	TBD
Boardings per Trip	Minimum 10 (annual average) for routes with one end in Denver Minimum 3 (annual average) for all other routes	Minimum 10 (annual average)	TBD
Net Deficit per Passenger	Maximum of $100 per trip for all services	TBD once contract is let. Appears range will be less than $20 per passenger trip	TBD
Minimum Operation	One round trip daily	One round trip daily	One round trip 3 days weekly
Maximum LOS Funded	N/A	16 one-way trips	2 round trips daily; overlapping routes to multiple destinations
Additional Services	N/A	30 or more passengers (average) per route and there are regularly insufficient seats on the vehicles	TBD